



MAIL STOP APPEAL
BRIEF - PATENTS

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants: R.A. Jewell et al. Attorney Docket No.: 23308C
Application No.: 10/666,262 Group Art Unit: 1731
Filed: September 17, 2003 Examiner: E. Hug
Title: METHOD FOR PRODUCING CELLULOSE FIBER HAVING IMPROVED BIOSTABILITY AND THE RESULTING PRODUCTS

UPDATED APPEAL BRIEF

Seattle, Washington
October 26, 2005

TO THE COMMISSIONER FOR PATENTS:

This brief is in support of a Notice of Appeal filed in the above-identified application on May 6, 2005, to the Board of Patent Appeals and Interferences appealing the decisions dated February 7, 2005, of the primary Examiner finally rejecting Claims 8-13 and 18-21.

Claims 18-21 are hereby withdrawn from this appeal in favor of revised claims submitted in a divisional application filed concurrently herewith.

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I. REAL PARTY IN INTEREST

Weyerhaeuser Company, a Washington corporation, having a place of business at 33663 Weyerhaeuser Way South, Federal Way, Washington, is the assignee of the entire interest of the appealed subject matter.

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II. RELATED APPEALS AND INTERFERENCES

This Appeal is related to the Appeal in Application No. 10/228,815, filed August 27, 2002. The Notice of Appeal was filed on September 15, 2004. The Appeal Brief, Examiner's Answer, and Reply Brief have all been filed in that matter. No decision has been rendered as of the filing date of this brief.

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III. STATUS OF CLAIMS

Claims 8-13 and 18-21 are pending in the application. All stand rejected under 35 U.S.C. § 102(b) or 103(a). Claims 8-13 are appealed. Claims 18-21 have been withdrawn in favor of a further divisional application. The table below indicates their status.

Claim(s)	Status	Appealed
1-7	Canceled	No
8	Amended	Yes
9	Amended	Yes
10	Amended	Yes
11	Original	Yes
12	Original	Yes
13	Original	Yes
14-17	Canceled	No
18-21	Withdrawn	No

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IV. STATUS OF AMENDMENTS

The application was finally rejected in a paper dated February 7, 2005. A Notice of Appeal to the Board of Appeals was filed on May 6, 2005. An amendment to Claim 9 filed concurrently with the Appeal Brief has been entered per a communication from Examiner Hug dated September 29, 2005. A copy of the appealed claims as amended is attached in the Claims Appendix.

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V. SUMMARY OF CLAIMED SUBJECT MATTER

There is one independent claim on appeal, Claim 8. Claim 8 is directed to a method for producing a cellulose fiber product that is resistant to biological degradation. The fiber product is produced from cellulose fibers derived from wood that are at least partially purified by a chemical pulping process. The fibers are treated with a biocidally effective amount of from 0.1-2.0% by weight of dry fiber of a compound selected from the group consisting of didecyldimethylammonium chloride (hereinafter "DDAC"), didecyldimethylammonium bromide (hereinafter "DDAB"), and mixtures thereof. Claim 8 also recites that the fiber product is *resistant to fiber length degradation during refining*. See page 3, line 29, through page 4, line 2, of the specification of this Application No. 10/666,262.

Claims 9-13 depend from Claim 8. Claim 9 recites additional treatment with a copper salt. This combination also results in a fiber that is *resistant to fiber length degradation during refining*. See again page 3, line 29, through page 4, line 2. Claim 10 limits the DDAB/DDAC to 0.5 to 1.0% by weight. Claims 11 and 12 are specific to DDAC and DDAB respectively. And Claim 13 recites that the fiber is an unbleached kraft fiber.

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VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

First Ground of Rejection – Claims 8-13

Claims 8-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the Canadian patent, No. 1,134,564 (hereinafter the Canadian Patent), further in view of Huth et al., U.S. Patent No. 5,049,383 (hereinafter Huth et al.), or Schultz et al., U.S. Patent No. 5,730,907 (hereinafter Schultz et al.).

Second Ground of Rejection – Claims 9, 11/9, 12/9, and 13/9

Claims 9, 11/9, 12/9, and 13/9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the Canadian patent in view of Huth et al. or Schultz et al. as applied to Claim 1, with or without Nicholas et al., U.S. Patent No. 5,462,589 (hereinafter Nicholas et al.).

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VII. ARGUMENT

First Ground of Rejection – Claims 8-13

Claim 8 is directed to a method for making a cellulose fiber product resistant to biological degradation comprising providing pulped cellulose fibers and treating those fibers with a biocidally effective amount of 0.1-2.0% by weight of dry fiber of a compound selected from the group consisting of DDAC, DDAB, or mixtures thereof. The fibers are dried to provide a fiber that is *resistant to fiber length degradation during refining*. This dried fiber also requires less refining energy than fibers treated with other biocides. These results are not suggested by the art of record. These results are both surprising and unexpected.

By way of background, cellulose fibers are used as a filler and reinforcing material for cement fiber boards. In order for the fibers to be used in cement fiber boards, they are typically refined to separate the fibers from one another prior to introduction into the cementitious material used to produce the fiber boards. Wood and other materials have, in the past, been treated for fungal resistance with heavy metal biocides, such as copper sulfate, DDAC, and DDAB. Prior to introduction of fibers into the cementitious material utilized to make the fiber board, the cellulose fibers are subjected to a refining process, which is a mechanical process that singulates or separates the fibers from one another. It has been found, however, that cellulose fibers treated with what was heretofore considered to be biocidally effective amounts of DDAC or DDAB, have required significantly higher energy input for refining and are also subject to considerable degradation during the refining process. The applicants herein have found that the use of a relatively small amount of DDAC, DDAB, or mixtures thereof (from 0.1-2.0%) alone or in conjunction with small amounts of copper (from 0.01-0.25%), is surprisingly still biocidally effective against fungi, while not significantly increasing the refining energy required to singulate

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the fibers, and quite surprisingly, without causing significant fiber length degradation of the fibers during refining.

Claims 8-13 are rejected as obvious over the Canadian patent as applied to Claim 14, further in view of Huth et al. or Schultz et al. The Examiner asserts that Huth et al. or Schultz et al. teaches the use of DDAC and/or DDAB as effective biocides to protect wood from biodegradation. He asserts that it would have been obvious to use the biocide of Huth et al. or Schultz et al. as a substitute for the copper salt of the Canadian patent.

The claimed invention is not rendered obvious by any combination of the Canadian patent, Huth et al. or Schultz et al. Section 103 of the Patent Laws requires that an invention must not have been "obvious at the time the invention was made to one of ordinary skill in the art to which the subject matter of the invention pertains." 35 U.S.C. § 103(a). In the landmark 1966 case of *Graham v. John Deere*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966), the Supreme Court ruled that in determining § 103 nonobviousness, the courts and the Patent and Trademark Office should make "several basic factual inquiries," namely, (1) the scope and content of the prior art, (2) the differences between the prior art and the claims at issue, and (3) the level of ordinary skill in the pertinent art. *Id.* at 17. The *Graham* court also noted that several secondary considerations were relevant in such a nonobviousness determination, namely, the commercial success of the invention, the existence of a long-felt, but unresolved, need met by the invention, and the failure of others to arrive at a similar invention. Unexpected results are also objective criteria of nonobviousness. *In re Margolis*, 785 F.2d 1029, 228 U.S.P.Q. 940 (Fed. Cir. 1986).

In order for the Examiner to establish a *prima facie* case of obviousness, the prior art relied upon, in this case the Canadian patent, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or motivation to one of ordinary skill to modify a reference or, for that matter, to combine the prior art reference with

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another prior art reference. *See Karsten Manufacturing Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1385, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001); *CR Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1352, 48 U.S.P.Q.2d 1225, 1232 (Fed. Cir. 1998); and *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). Further, in order to establish a *prima facie* case of obviousness, the proposed modification of the prior art must have had a reasonable expectation of success. In other words, a hindsight analysis is not allowed. *See, for example, Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 18 U.S.P.Q.2d 1016, 1022 (Fed. Cir. 1991). Finally, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *See In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Applicants are not disputing that DDAC and DDAB are known biocides for use in the preservation of wood. Applicants' invention is not the application of DDAC or DDAB to wood *per se*, but to cellulose fibers in a specific amount ranging from 0.1-2.0%. This amount of DDAC or DDAB not only functions as a biocide at those low percentages, but provides a fiber that can still be refined at low refining energies and a fiber *that is resistant to fiber length degradation when refined*. Tables 5 and 6 of applicants' specification show that the refining energy required to refine fiber containing from 0.2-1% DDAC is approximately the same as that required for untreated fiber, that is, on the order of about 2640 MJ/T. Similarly, the length of the treated fiber after refining is not significantly affected when compared with an untreated fiber. This is a clearly surprising result in view of the fact that biocides, when added to cellulose fibers, normally result in significant fiber length degradation. Thus, applicants have achieved a surprising result when incorporating a biocidally effective amount from 0.1-2% of DDAC and/or DDAB, that is, the fiber does not suffer length degradation during the refining process.

Huth et al. and Schultz et al. both teach the use of DDAC and DDAB as a preservative for hardwood. The materials are applied to hardwood (not pulped cellulose fibers) by external

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application. See, for example, Schultz et al. (dropping, spraying, brush), Col. 6, lines 9-15 and Huth et al. (painting), Col. 12, lines 37-44. Applicants, to the contrary, apply the DDAC/DDAB directly to the cellulose fibers (that are produced from a chemical pulping process) in amounts ranging from 0.1-2.0% by weight of the dry fiber. This process produces a fiber that, when dried, is not subject to fiber degradation during refining and that requires about the same refining energy as untreated fibers. These results are not suggested or hinted at by any combination of the references. Indeed, these results are truly unexpected and contrary to what one of ordinary skill would glean from the references.

Again, there is no disclosure, suggestion, or even hint, in the Canadian patent, Huth et al., or Schultz et al., that utilizing DDAC and DDAB on cellulose fibers within the claimed range will surprisingly result in a fiber that will not suffer length degradation during refining. The Examiner has, therefore, again failed to set forth a *prima facie* of nonobviousness. Claim 8 and the claims depending therefrom are therefore unobvious over the art of record. *See In re Vaeck, supra*, and *In re Margolis, supra*.

Claims 9-13 further limit independent Claim 8. The patentability of Claims 10, 11/8, 12/8, and 13/8 stand or fall with the patentability of Claim 8. The arguments set forth below in connection with the Second Ground of Rejection are applicable to Claim 9 and the claims depending therefrom under the First Ground of Rejection, as the references applied are, in essence, the same. The arguments from the Second Ground of Rejection are therefore incorporated herein by reference. Claim 9 and the claims depending therefrom are unobvious and therefore patentable for the reasons set forth below.

The Examiner's First Ground of Rejection must therefore be reversed.

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Second Ground of Rejection – Claims 9, 11/9, 12/9, and 13/9

Claim 9 depends from Claim 8 and incorporates from 0.01-0.25% of copper from a water soluble copper salt into the cellulose fibers as well as the DDAC and DDAB recited in Claim 8. Claims 11/9, 12/9, and 13/9 all depend from Claim 9 and further limit that claim.

The Examiner contends that it would be obvious in view of the Canadian patent to incorporate copper with DDAC/DDAB as defined in independent Claim 8. While the references disclose that copper salts, DDAB, and DDAC are biocides, they do not recognize the problem of high refining energy and fiber degradation during refining when these biocides are used in conventional amounts on cellulose fibers. Applicants have discovered, quite unexpectedly, that when DDAC/DDAB and copper salts are used in the recited amounts, not only do the treated fibers exhibit biocidal characteristics, they also are resistant to fiber degradation during refining. See the test results set forth in Table 5, page 10, of applicants' specification. In addition, the treated fibers with low amounts of copper require no more refining energy than is required for untreated fibers. These results are unexpected and not suggested or taught by the cited art.

It is admitted that the Canadian patent teaches the use of copper salts. It does not, however, teach the use of 0.01-0.25% copper in combination with DDAC/DDAB to achieve applicants' unexpected results. Similarly, Nicholas et al. teaches the use of copper salts on wood, but not on cellulose fibers. There is no reason for one of ordinary skill to be led by Nicholas et al. to use applicants' claimed combination of DDAC/DDAB and copper salts on cellulose fibers to achieve applicants' results.

Again, the Examiner has not set forth a *prima facie* case of nonobvious. He has not shown that the references of record suggest or even hint at applicants' claimed invention, namely the use of a biocidally effective, small amounts of copper and of DDAC, DDAB, or mixtures thereof, produce a cellulose fiber that is not subject to fiber length degradation during refining.

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Again, none of the references of record recognize applicants' invention that using small amounts of the recited biocides still retain biocidal effectiveness when applied to cellulose fiber, while surprisingly not altering the fibers to the extent that they suffer significant fiber length degradation during refining. See again the test results set forth in Table 5, page 10, of applicants' specification. Weight must be given to applicants' unexpected results. *See Graham v. John Deere, supra, In re Margolis, supra, and In re Vaeck, supra.* Thus, applicants' Claims 9, 11/9, 12/9, and 13/9 are unobvious, and therefore patentable, over the art of record.

The Examiner's Second Ground of Rejection must therefore be reversed.

Respectfully submitted,

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Date: October 26, 2005



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VIII. CLAIMS APPENDIX

1-7. (Canceled)

8. A method for producing a cellulose fiber product resistant to biological degradation which comprises:

providing a cellulose fiber derived from wood that has been at least partially purified by a chemical pulping process;

treating the fiber so that it contains a biocidally effective amount of 0.1-2.0% by weight of dry fiber of a biocidal composition selected from the group consisting of didecyldimethylammonium chloride, didecyldimethylammonium bromide and mixtures thereof; and

drying the treated fiber that is resistant to fiber length degradation during refining.

9. The method of Claim 8 in which the fiber is also treated with a water soluble copper salt to provide 0.01-0.25% of copper based on the weight of dry fiber.

10. The method of Claim 8 in which the didecyldimethylammonium chloride, didecyldimethylammonium bromide or mixture thereof is present in the fiber in an amount of 0.5-1.0% by weight of dry fiber.

11. The method of Claims 8 or 9 in which the biocidal composition is the didecyldimethylammonium chloride.

12. The method of Claims 8 or 9 in which the biocidal composition is the didecyldimethylammonium bromide.

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13. The method of Claims 8 or 9 in which the cellulose fiber is an unbleached kraft fiber.

14-17. (Canceled)

18. (Withdrawn) A method for producing a cellulose fiber product resistant to biological degradation which comprises:

providing a wood-derived cellulose fiber derived from wood that has been at least partially purified by a chemical pulping process;

treating the fiber so that it contains a biocidally effective amount of a water soluble copper salt to obtain a copper content in the fiber in the range from 0.01-0.25% by weight of the fiber; and

drying the treated fiber.

19. (Withdrawn) The method of Claim 18 which further includes in combination with the copper salt a biocidally effective amount of a compound selected from the group consisting of didecyldimethylammonium chloride, didecyldimethylammonium bromide and mixtures thereof.

20. (Withdrawn) The method of Claim 19 in which the didecyldimethylammonium chloride, didecyldimethylammonium bromide or mixture thereof is present in the fiber in an amount of 0.1-2.0% by weight of the dry fiber.

21. (Withdrawn) The method of Claim 16 in which the cellulose fiber is an unbleached kraft fiber.

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IX. EVIDENCE APPENDIX

There is no supporting evidence.

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X. RELATED PROCEEDINGS APPENDIX

There are no related proceedings.

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Title: METHOD FOR PRODUCING CELLULOSE FIBER HAVING IMPROVED BIOSTABILITY AND THE RESULTING PRODUCTS

TRANSMITTAL OF UPDATED APPEAL BRIEF

October 26, 2005

TO THE COMMISSIONER FOR PATENTS:

Enclosed herewith for filing in the above-identified application is an Updated Appeal Brief correcting the deficiencies noted by the Examiner in the Notification of Non-Compliant Appeal Brief dated September 29, 2005.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.18 which may be required during the entire pendency of the application, or credit any overpayment, to Deposit Account No. 03-1740. This authorization also hereby includes a request for any extensions of time of the appropriate length required upon the filing of any reply during the entire prosecution of this application.

Respectfully submitted,

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Date: October 26, 2005

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